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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.                    | CONFIRMATION NO. |
|--|-------------|----------------------|--|------------------|
| 10/677,427   | 10/02/2003  | Richard B. Peterson  | 245-71325-02                           | 8446             |
| 24197 7590 02/08/2007<br>KLARQUIST SPARKMAN, LLP<br>121 SW SALMON STREET<br>SUITE 1600<br>PORTLAND, OR 97204 |             |                      | EXAMINER<br>ECHELMEYER, ALIX ELIZABETH |                  |
|  |             |                      | ART UNIT<br>1745                       | PAPER NUMBER     |
| SHORTENED STATUTORY PERIOD OF RESPONSE   |             | MAIL DATE            | DELIVERY MODE                          |                  |
| 3 MONTHS   |             | 02/08/2007           | PAPER                                  |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |  |   |  |
|------------------------------|--|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/677,427         | <b>Applicant(s)</b><br>PETERSON, RICHARD B. |  |
|                              | <b>Examiner</b><br>Alix Elizabeth Echelmeyer | <b>Art Unit</b><br>1745                     |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 November 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 16-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10-2-03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I, Claims 1-15 (and species indicated in response) in the reply filed on November 16, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 1-15 are pending and are rejected for the reasons given below.
3. In claim 3, the thermal insulation barrier elected is the vacuum multi-foil insulation envelope. In claims 6 and 9, the material elected is quartz. In claim 13, the insulation elected is aerogel.

### ***Claim Objections***

4. Claim 10 is objected to because of the following informalities: it does not end with a period. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1, 2 and 4-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jankowski et al. (US Pre-Grant Publication 2004/0072039) in view of Fuglevand et al. (US Pre-Grant Publication 2002/0031692).

Regarding claims 1, 2, 8-13 and 15, Jankowski et al. teach a miniaturized solid-oxide fuel cell system (abstract, [0003]). The system includes a counter flow heat exchanger, catalytic combustor and exhaust vent ([0044], [0045]). As in the fuel cell system is a fuel inlet and an oxidant inlet (Figure 1, [0035]).

Jankowski et al. further teach that the fuel cell system is thermally isolated, for example using aerogel, vacuum packaging, or a combination of these, to minimize heat conduction [0075]). In order to create thermal isolation, the packaging would have to be sealed to prevent heat from escaping, especially since solid oxide fuel cells are well known to operate at very high temperatures.

Regarding claim 4, the power generated by the fuel cell is seen in Figure 4.

As for claim 5, the fuel cell is powered by hydrogen ([0021]).

Regarding claim 6, the insulation system of Jankowski et al. uses aerogel, which includes quartz.

Concerning claim 7, Jankowski et al. teach the catalytic combustor would inherently create heat, since heat is a byproduct of a catalytic reaction.

As for claim 14, Jankowski et al. teach that the system is miniature but do not provide a size range. It would have been obvious to one having ordinary skill in the art at the time the invention was made to determine the size most appropriate for the desired application since, in portable systems, it is desirable to keep size and weight at

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a minimum ([0066]). It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. MPEP 2144.04 (A)

Jankowski et al. fail to teach that the fuel cell system is plug-compatible.

Fuglevand et al. teach a fuel cell system that contains removable fuel cells (Figure 3, [0071]-[0078]).

Fuglevand et al. further teach that it is desirable to make the fuel cells removable in order to facilitate repair ([0006]).

It would be advantageous to make the fuel cell system of Jankowski et al. plug compatible as taught by Fuglevand et al. since it would make the system removable in case the need to repair the system arose.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the fuel cell system of Jankowski et al. plug compatible as taught by Fuglevand et al. since it would make the system removable in case the need to repair the system arose.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jankowski et al. in view of Fuglevand et al. as applied to claim 2 above, and further in view of Armstrong et al. (US Patent 6,682,841).

The teachings of Jankowski et al. and Fuglevand et al. as discussed above are incorporated herein.

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Jankowski et al. in view of Fuglevand et al. teach the thermally insulated plug-compatible system of the instant invention but fail to teach that the system is thermally insulated by vacuum multi-foil insulation.

Armstrong et al. teach a thermally insulated solid oxide fuel cell system (column 1 lines 47-59). Armstrong et al. further teach that vacuum foil insulation having solid walls with a vacuum between may be used to insulate the fuel cell system (column 4 lines 22-36, 50-51).

The vacuum taught by Armstrong et al. impedes conductive and convective heat transfer from the fuel cell to the environment (column 4 lines 52-58).

It would be advantageous to use the vacuum foil insulation of Armstrong et al. in the fuel cell system of Jankowski et al. in view of Fuglevand et al. since it impedes conductive and convective heat transfer from the fuel cell to the environment.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the vacuum foil insulation of Armstrong et al. in the fuel cell system of Jankowski et al. in view of Fuglevand et al. since it impedes conductive and convective heat transfer from the fuel cell to the environment.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's trainer, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1745

aee

  
SUSY TSANG-FOSTER  
PRIMARY EXAMINER